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### The use of short form 36 health survey to assess effectiveness of autologous chondrocyte implantation

P.K. Jaiswal<sup>1</sup>, M. Jameson-Evans<sup>2</sup>, J. Jagiello<sup>2</sup>, R. Carrington<sup>2</sup>, J. Skinner<sup>2</sup>, T. Briggs<sup>2</sup>, G. Bentley<sup>2</sup>;

<sup>1</sup>The Joint Reconstruction Unit, The Royal National Orthopaedic Hospital, London, United Kingdom, <sup>2</sup>Joint Reconstruction Unit, Royal National Orthopaedic Hospital, London, United Kingdom

**Purpose:** Autologous Chondrocyte Implantation (ACI) is being increasingly used in the treatment of osteochondral defects of the knee. We tested the hypothesis that ACI produces improvement in the Short Form (SF36) score comparable to those produced in total knee replacement (TKR).

**Methods and Materials:** We prospectively used the SF-36 and the Modified Cincinnati Score (MCS) to evaluate 105 patients pre-operatively and 1 year following surgery. We compared our results to another study which analysed the results of TKR using the SF36 one year following surgery.

**Results:** The mean age of ACI patients were 33.6 (range 16 to 51) and there were 58 females and 47 males. The MCS increased from 45.4 to 60.1 following surgery. The overall SF-36 score increased from 421 to 532. Physical function (PF = 10.7), bodily function (BF = 12.4), role physical (RP = 29.6) and role emotional (RE = 21.8) were the most significant increases within this scoring system. The increases were directly comparable to those seen in TKR and the absolute postoperative PF, RP and RE were greater in the ACI group. PF, BF and RP correlated well with the MCS (Pearson correlation co-efficient = 0.62, 0.63 and 0.71 respectively).

**Conclusions:** There was an overall increase of SF-36 scores following ACI, reflecting improvements to perceived health. We have also demonstrated that physical, emotional and mental well being normalises following ACI and is comparable to TKR in the short term. Patients counselled pre-operatively should be made aware of the effectiveness of this procedure but also the lack of long term data.

## P89

### Does smoking influence outcome after autologous chondrocyte implantation? A case control study.

P.K. Jaiswal<sup>1</sup>, J. Jagiello<sup>2</sup>, R. Carrington<sup>2</sup>, J. Skinner<sup>2</sup>, T. Briggs<sup>2</sup>, G. Bentley<sup>2</sup>;

<sup>1</sup>The Joint Reconstruction Unit, The Royal National Orthopaedic Hospital, London, United Kingdom, <sup>2</sup>Joint Reconstruction Unit, Royal National Orthopaedic Hospital, London, United Kingdom

**Purpose:** We determined whether smoking had a deleterious effect on outcome after autologous chondrocyte implantation (ACI) in the treatment of osteochondral defects of the knee.

**Methods and Materials:** We identified 103 (54 females and 49 males) patients with a mean age of 34.2 (range 18 to 49) who had undergone ACI between January 2001 and August 2004 who also had their smoking status recorded. The patients were divided into 3 groups. The Modified Cincinnati Score (MCS) was used to assess function pre-operatively, 6 months and then yearly thereafter.

**Results:** Group 1 consisted of 31 smokers (mean pack years of 13.4), group 2 consisted of 63 non-smokers and group 3 contained 9 ex-smokers. In Group 1, the MCS pre-operatively, 1 year and 2 years following surgery were 34.1, 43.5 and 46.7 respectively. In group 2 the scores were 47.4, 59.1, 65.3, and in group 3 the scores were 39.8, 53.3, 51.8. At the 1 year check arthroscopy, the graft failure rate in group 1 was 12% and biopsies revealed mixed hyaline and fibrocartilage in only 25% (there were no patients with hyaline cartilage). There were no graft failures in group 2 (43.8% of the biopsies performed were either hyaline (12.5%) or mixed hyaline and fibrocartilage (31.3%)). The wound complication rate was 24% (group 1) and 8% (group 2).

**Conclusions:** The study suggests that smokers have a worse functional outcome and a higher complication rate following ACI. This association has not been previously described and should be included in the pre-operative counselling of patients undergoing the procedure.

## P90

### New technique of arthroscopic cartilage transplantation in the knee - strictly autologous

T. Schreyer<sup>1</sup>, S. Rössing<sup>2</sup>, H. Pässler<sup>3</sup>, H. Thermann<sup>3</sup>, P. Baum<sup>4</sup>;  
<sup>1</sup>Klinik Für Unfall-, Sport- Und Orthopädische Chirurgie, Evangelisches Krankenhaus Elisabethenstift, Darmstadt, Germany, <sup>2</sup>Dep. Of Knie And Fußchirurgie, ATOS Klinik, Heidelberg, Germany, <sup>3</sup>Dep. For Knie Und Fußchirurgie, ATOS Klinik, Heidelberg, Germany, <sup>4</sup>Gelenklinik, Praxisklinik, Gundelfingen, Germany

**Purpose:** The aim was to develop an arthroscopic technique for cartilage transplantation, which is save and easy to perform and that does not need any scaffold or membranes for fixation of the cartilage cells.

**Methods and Materials:** For the transplantation spheroids (co.don AG, Teltow, Germany) were used; spheroids are a conglomeration containing of cartilage cells and their own produced matrix. Thus no membranes or scaffolds are used to fix the cells in the cartilage defect. The spheroids are put in the defect with a pipette during an arthroscopic procedure 6 weeks after they were harvested in a first arthroscopic procedure and then cultivated an a special laboratory.

**Results:** We use the new arthroscopic technique since one year and we found, that the procedure is save (no chage to an open procedure needed) and it seems that the results are at least as good as with the open procedure with the periosteum flap. The duration of the procedure is shorter, minimal invasive and the rehabilitation concerning range of motion is much faster.

**Conclusions:** The newly developped technique is a safe one that strictly avoids the use of membranes or fibrin glue or scaffolds. It seems to have at least the outcome as the open procedure with the periosteum flap and it has a minimized operations trauma, a diminished operations duration and gives us the possibility of a shorter stay in the hospital for the patients.

## P91

### Treatment of cartilage defects by transplantation autologous chondrocytes under collagen membrane - preliminary report

J. Deszczynski<sup>1</sup>, K. Słynarski<sup>2</sup>;  
<sup>1</sup>Department Of Orthopedic Surgery And Rehabilitation 2nd Medical Faculty Of Warsaw Medical University, Warsaw Medcial University, Warsaw, Poland, <sup>2</sup>Departament Of Orthopedic Surgery And Rehabilitation 2nd Medical Faculty Of Warsaw Medical University, Warsaw Medical University, Warsaw, Poland

**Purpose:** The main aspect of our work was to analyze early clinical results of altologous chondrocytes transplantation combined with collagen membrane in treatment of cartilage defects of the knee joint.

**Methods and Materials:** There were three patients involved into this study, with mean age 27,6 years. At two patients defects were localized in femoral condyles and the other one in patella. All patients complained, for 2-4 years of disabling pain of the knee joint. All of them were subjected to other surgical procedures (defect debridement, microfractures) which did not relieve them from pain. The procedure was performed by transplantation of autologous chondrocytes under collagen type I and III membrane, fixed over the defect with sutures and fibrin glue. Analogue pain scale was performed in the first, third and sixth month after the operation. Patients were evaluated with magnetic resonance (MR) imaging between 6 and 8 month postoperatively.

**Results:** Patient with patellar reconstruction presented restriction of flexion to 90 degrees at third month and recovered to pain-free full range of motion at six month. At 9 month one patient was diagnosed with graft hypertrophy and was successfully treated with arthroscopic excision of overgrowth tissue. All three patients returned to pain-free activity level 12 months after surgery, with the full range of motion

**Conclusions:** MR imaging revealed reconstructed surface with good contour and continuity, expect one patient, who had graft over growth. This work present only early results of small group of patients, however in our experience; this approach to cartilage reconstruction seems to be promising.